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For: MONITOR

SUBMISSION OF ENGLISH TRANSLATION

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

Attached is the English translation of Korean Patent Application No. 2002-59208, filed in the U.S. Patent and Trademark Office on September 29, 2003. It is respectfully requested that the attached English translation be made of record in the above-identified application.

If any further fees are required in connection with the filing of this English Translation, please charge same to our Deposit Account No. 19-3935.

Respectfully submitted,

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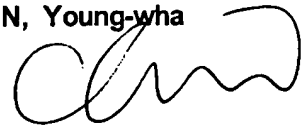
DECLARATION

I, CHIN, Young-wha translator working at the Leaders Bldg. 3F. 1599-11 Seocho-dong, Seocho-gu Seoul 137-070 Republic of Korea and do hereby declare that I am familiar with the English language as a Korean and that the attached is a true English translation of the Korean transcript of Korean Patent Application Nos. 2002-59208 filed with the Korean Intellectual Property Office on **September 28, 2002.**

January 30, 2006

CHIN, Young-wha



MONITOR

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of Korean Patent Application No. 2002-059208, filed September 28, 2002, in the Korean Intellectual Property Office, the disclosure of which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a monitor, and more particularly, to a monitor comprising a monitor main body and a base member supporting the monitor main body.

Description of the Related Art

Generally, a monitor comprises a monitor main body displaying a picture thereon, a base member supporting the monitor main body, and a link member allowing the monitor main body to be forward and backward tilted and its height to be adjusted.

On the other hand, according as the computer system is rapidly spread, demand of the monitor is also being rapidly increased. In relation to the increased demand of the monitor, there has been provided an arm stand to support a monitor, which is manufactured separately from the monitor and combined to the monitor, to thereby meet various user's preferences. Further, a

combining structure of the monitor and the arm stand has been regulated by VESA (video electronic standard association).

As shown in FIG. 1, a conventional monitor includes a base member 201 laid on a horizontal plane, a monitor main body 202 displaying a picture thereon, and a link member 210 linking the base member 201 with the monitor main body 202.

A lower part of the link member 210 is forward and backward tiltably combined to the base member 201 by means of a pair of fixing brackets 204 and 206, and an upper part of the link member 210 is fixed to the monitor main body 202.

Thus, along a direction of an arrow "A" in FIG. 1, the link member 210 can be forward and backward tilted relative to the base member 201, but the monitor main body 202 cannot be tilted relative to the link member 210. Therefore, in the conventional monitor, it is possible to adjust a height of the monitor main body, but it is inconvenient to adjust an angle of the monitor main body 202.

Contrary to the monitor shown in FIG. 1, it is possible that the upper part of the link member is rotatably combined to the monitor main body, and the lower part of the link member is fixed to the base member. In this structure, it is possible to adjust the angle of the monitor main body, but it is inconvenient to adjust the height of the monitor main body

However, in the conventional monitor, because the height of

the monitor main body is adjusted by rotating the link member relative to the base member and a size of the link member should depend on a size of the base member, an allowable height adjustment of the monitor main body is relatively small.

Further, in the conventional monitor, because the monitor main body is not folded to the base member, a packing volume of the monitor cannot be decreased, thereby increasing costs for keeping and carrying the monitor.

Further, in the conventional monitor, because the base member must be laid on only the horizontal plane, it is impossible to install the monitor onto an inclined plane, such as a wall, the arm stand for the monitor, etc.

SUMMARY OF THE INVENTION

Accordingly, it is an aspect of the present invention to provide a monitor in which an allowable height adjustment of a monitor main body is relatively large, and costs for keeping and carrying the monitor can be decreased by decreasing a packing volume of the monitor.

It is another aspect of the present invention to provide a monitor, in which a height of a monitor main body can be adjusted without changing a tilting angle of the monitor main body, and a tilting angle of the monitor main body with respective to a base member can be properly adjusted.

It is still another aspect of the present invention to

provide a monitor, in which a base member is detachably combined with a base bracket and can be installed onto an inclined plane, such as a wall, an arm stand, etc., and particularly, easily installed onto various arm stands according to a VESA regulation.

Additional aspects and advantages of the invention will be set forth in part in the description which follows and, in part, will be obvious form the description, or may be learned by practice of the invention.

To achieve the foregoing and/or other aspects of the present invention, a monitor comprising a monitor main body displaying a picture thereon, and a base member supporting the monitor main body, further comprises: a lower link member rotatably combined to a base hinge provided in the base member; an upper link member rotatably combined to a monitor hinge provided in the monitor main body; a link hinge provided between the upper link member and the lower link member and allowing the upper link member to rotate relative to the lower link member; and a first auxiliary link member disposed parallel with the lower link member at a position deviated from axes of the link hinge and the base hinge, connecting the lower link member with the upper link member, and transmitting a rotary motion from the lower link member relative to the base member to the upper link member.

According to another aspect of the invention, the monitor further comprises, in order to transmit rotary motion from the

upper and lower link members relative to the base member to the monitor main body, a second auxiliary link member disposed parallel with the lower link member at a position deviated from axes of the link hinge and the base hinge, connecting the link hinge with the base member; and a third auxiliary link member disposed parallel with the upper link member at a position deviated from axes of the monitor hinge and the link hinge, and connecting the monitor hinge with the link hinge.

According to another aspect of the invention, the monitor further comprises a base bracket combined to the base member so as to install the base member onto an inclined plane, wherein the base bracket includes at least one hook to be latched to at least one hook hole formed on the base so as to be detachably combined to the base member.

According to another aspect of the invention, the base bracket includes at least one first combining hole so as to be installed to the inclined plane.

According to another aspect of the invention, the base bracket includes at least one second combining hole so as to be combined with the base member, and the base member includes a third combining hole corresponding to the second combining hole.

According to another aspect of the invention, the second combining holes of the base bracket and the third combining holes of the base member are formed according to a VESA regulation.

According to another aspect of the invention, the monitor further comprises first and second base brackets spaced from each other and combined to the base member, and wherein the base bracket includes first and second base hinge parts rotatably connecting lower opposite parts of the lower link member to the first and second base brackets, respectively.

According to another aspect of the invention, the first base hinge part includes a first hinge pin formed with a first end having a circular cross section and a second end having a noncircular cross section; a first pin accommodating part formed on one lower part of the lower link member and accommodating the first end of the first hinge pin to be rotatable therein; and a first pin holding part formed on one side of the first base bracket and fitting the second end of the first hinge pin therein.

According to another aspect of the invention, between the first pin accommodating part and the first end of the first hinge pin is interposed a first friction spring resisting the rotation of the first hinge pin.

According to another aspect of the invention, the first base bracket is formed with a spring supporting part protruding from one side thereof, and a torsion spring is put on the spring supporting part and elastically acting in an opposite direction to a downward rotation of the lower link member relative to the base member.

According to another aspect of the invention, the second base hinge part includes a second hinge pin formed with a first end having a circular cross section and a second end having a noncircular cross section; a second pin accommodating part formed on the other lower part of the lower link member and accommodating the first end of the second hinge pin to be rotatable therein; and a second pin holding part formed on one side of the second base bracket and fitting the second end of the second hinge pin therein.

According to another aspect of the invention, at least one of the first and second base hinge parts is provided with a rotation restricting part restricting the rotation of the lower link member relative to the base member within a predetermined angle range.

According to another aspect of the invention, the rotation restricting part includes a pair of first stoppers formed by cutting a fan shaped groove in the other lower part of the lower link member, around the second pin accommodating part, to face each other, and a pair of first projections provided around the second pin holding part formed on one side of the second base bracket, and selectively stopped by one of the first stoppers according to the rotating direction of the lower link member.

According to another aspect of the invention, the link hinge includes first and second link hinge parts to rotatably connect

upper opposite parts of the lower link member with lower opposite parts of the upper link member, respectively.

According to another aspect of the invention, the first link hinge part includes a first hinge axle combined to one lower part of the upper link member and one upper part of the lower link member so as to rotatably connect the one lower part of the upper link member with the one upper part of the lower link member; a first axle accommodating part formed in the one upper part of the lower link member and passing the first hinge axle to be rotatable therethrough; and a first axle holding part formed on the one lower part of the upper link member and combined with a first end of the first hinge axle so as to rotate coincidentally with the upper link member.

According to another aspect of the invention, the second link hinge part includes a second hinge axle combined to the other lower part of the upper link member and the other upper part of the lower link member so as to rotatably connect the other lower part of the upper link member with the other upper part of the lower link member; a second axle accommodating part formed in the other upper part of the lower link member and passing the second hinge axle to be rotatable therethrough; and a second axle combining part formed on the other lower part of the upper link member and passing the second hinge axle to be rotatable therethrough.

According to another aspect of the invention, the monitor further comprises third and fourth monitor brackets spaced from each other and combined to the monitor main body, and wherein the monitor hinge includes first and second monitor hinge parts rotatably connecting the upper opposite parts of the upper link member to the third and fourth monitor brackets, respectively.

According to another aspect of the invention, the first monitor hinge part includes a third hinge pin formed with a first end having a circular cross section and a second end having a noncircular cross section; a third pin accommodating part formed on one side of the third monitor bracket and inserting the first end of the third hinge pin to be rotatable therein; and a third pin holding part formed in one upper part of the upper link member and fitting the second end of the third hinge pin therein.

According to another aspect of the invention, the second monitor hinge part includes a fourth hinge pin formed with a first end having a circular cross section and a second end having a noncircular cross section; a fourth pin accommodating part formed on one side of the fourth monitor bracket and inserting the first end of the fourth hinge pin to be rotatable therein; a third hinge axle fitting the second end of the fourth hinge pin therein and rotating coincidentally with the fourth hinge pin; and a third hinge axle accommodating part formed in the other upper part of the upper link member and passing the third hinge

axle to be rotatable therethrough.

According to another aspect of the invention, between the fourth pin accommodating part and the first end of the fourth hinge pin is interposed a second friction spring resisting the rotation of the fourth hinge pin.

According to another aspect of the invention, at least one of the first and second monitor hinge parts is provided with a tilt restricting part restricting the tilt of the monitor main body relative to the upper link member within a predetermined angle range.

According to another aspect of the invention, the tilt restricting part includes a tilt restricting washer formed with a matching hole matching with the second end of the fourth hinge pin, and a pair of second stoppers protruding from the circumference thereof at a predetermined distance from each other; and a flat spring combined to one side of the fourth monitor bracket, rotatable between the pair of second stoppers of the tilt restricting washer coincidentally with the monitor main body, and restricting the tilt of the monitor main body relative to the upper link member within a predetermined angle range.

According to another aspect of the invention, the flat spring is formed with an elastic projection part to be disposed between the pair of second stoppers of the tilt restricting washer.

According to another aspect of the invention, the elastic projection part of the flat spring is deformed enough to pass at least one of the second stoppers of the tilt restricting washer.

According to another aspect of the invention, the first auxiliary link member forms a pair, and the first base bracket is formed with a first auxiliary link supporting part coupled with a lower part of the first auxiliary link member, and the second end of the first hinge axle of the first link hinge part is formed with the first auxiliary link combination part coupled with an upper part of the first auxiliary link member.

According to another aspect of the invention, the first auxiliary link supporting part and the first auxiliary link combination part are respectively formed with a pair of first pin holes spaced from each other at a predetermined distance, opposite end parts of the first auxiliary link member are formed with first pin through holes to be aligned with the first pin holes, and first link pins are inserted in the first pin holes through the first pin through holes.

According to another aspect of the invention, the second auxiliary link member forms a pair, and the second base bracket is formed with a second auxiliary link supporting part coupled with a lower part of the second auxiliary link member, and the first end of the second hinge axle is formed with the second auxiliary link combination part coupled with an upper part of the

second auxiliary link member.

According to another aspect of the invention, the second auxiliary link supporting part and the second auxiliary link combination part are respectively formed with a pair of second pin holes spaced from each other at a predetermined distance, opposite end parts of the second auxiliary link member are formed with second pin through holes to be aligned with the second pin holes, and second link pins are inserted in the second pin holes through the second pin through holes.

According to another aspect of the invention, the third auxiliary link member forms a pair, and the second end of the second hinge axle is formed with a third auxiliary link supporting part coupled with a lower part of the third auxiliary link member, and the second end of the third hinge axle is formed with the third auxiliary link combination part coupled with an upper part of the third auxiliary link member.

According to another aspect of the invention, the third auxiliary link supporting part and the third auxiliary link combination part are respectively formed with a pair of third pin holes spaced from each other at a predetermined distance, opposite end parts of the third auxiliary link member are formed with third pin through holes to be aligned with the third pin holes, and third link pins are inserted in the third pin holes through the third pin through hole.

BRIEF DESCRIPTION OF THE DRAWINGS

These and/or other aspects and advantages of the present invention will become apparent and more readily appreciated from the following description of the embodiments, taken in conjunction with the accompany drawings of which:

FIG. 1 is a perspective view illustrating a rear of a conventional monitor;

FIG. 2 is a perspective view illustrating a rear of a monitor according to an embodiment of the present invention;

FIGS. 3 and 4 are exploded perspective views of the monitor of FIG. 2;

FIGS. 5 and 6 are side views illustrating operations of a first auxiliary link member in the monitor of FIG. 2;

FIGS. 7 and 8 are side views illustrating operations of second and third auxiliary link members in the monitor of FIG. 2;

FIG. 9 is a side view illustrating a monitor main body being folded to a base member in the monitor of FIG. 2;

FIGS. 10 and 11 are partially enlarged sectional views illustrating operations of a lower link member relative to the base member in the monitor of FIG. 2;

FIGS. 12 and 14 are partially enlarged sectional views illustrating operations of the monitor main body relative to an upper lower link member in the monitor of FIG. 2;

FIG. 15 is a perspective view illustrating the base member

to be mounted with a base bracket in the monitor of FIG. 2; and

FIG. 16 is a side view illustrating an arm stand mounted with the monitor being mounted onto an arm stand of FIG. 2.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Reference will now be made in detail to the embodiment of the present invention, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to like elements throughout. The embodiment is described below in order to explain the present invention by referring to the figures.

Generally, a monitor includes a monitor main body displaying a picture thereon, and a base member supporting the monitor main body and laid on a predetermined inclined plane, such as a wall, a table, etc.

Recently, the monitor is being made of an LCD (liquid crystal display), so that the monitor can have a relatively thin monitor main body even if a displaying area thereof is enlarged. Hereinbelow, the monitor made of an LCD panel will be exemplarily described.

As shown in FIGS. 2 and 4, the monitor according to an embodiment of the present invention includes a monitor main body 10, a base member 20 supporting the monitor main body 10, a lower link member 50 rotating relative to the base member 20, a base

hinge 60 provided between the base member 20 and the lower link member 50 and allowing the lower link member 50 to rotate relative to the base member 20, an upper link member 100 rotating relative to the monitor main body 10, a monitor hinge 130 provided between the monitor main body 10 and the upper link member 100 and allowing the upper link member 100 to rotate relative to the monitor main body 10, a link hinge 110 provided between the upper link member 100 and the lower link member 50 and allowing the upper link member 100 to rotate relative to the lower link member 50, a first auxiliary link member 160 transmitting a rotary motion from the lower link member 50 relative to the base member 20 to the upper link member 100, second and third auxiliary link members 170 and 175 transmitting the rotary motion from the lower and upper link members 50 and 100 relative to the base member 20 to the monitor main body 10, first and second base brackets 30 and 40 spaced from each other and combined to the base member 20, and third and fourth monitor brackets 80 and 90 spaced from each other and combined to the monitor main body 10.

On a front of the monitor main body 10 is provided a screen (not shown), and on a rear thereof are fastened the third and fourth monitor brackets 80 and 90 with screws 15, wherein the third and fourth monitor brackets 80 and 90 are spaced from each other and rotatably combined to the upper link member 100.

The base member 20 is laid on a horizontal plane, such as a table, and supports the monitor main body 10. On the base member 20 are fastened the first and second base brackets 30 and 40 with the screws 15.

The base hinge 60 includes first and second base hinge parts 61 and 71 rotatably connecting lower opposite parts 50a of the lower link member 50 to the first and second base brackets 30 and 40, respectively.

The lower link member 50 is rectangular and includes the lower opposite parts 50a to be rotatably connected by the first and second base hinge parts 61 and 71 to the first and second base brackets 30 and 40 fastened to the base member 20, and upper opposite parts 50b to be rotatably connected by first and second link hinge parts 111 and 121 (to be described later) to lower opposite parts 100a of the upper link member 100.

The first base hinge part 61 includes a first hinge pin 63 formed with a first end 63a having a circular cross section and a second end 63b having a noncircular cross section, a first pin accommodating part 52 formed on one lower part 50a of the lower link member 50 and accommodating the first end 63a of the first hinge pin 63 therein so as to be rotatably combined with the first hinge pin 63, a first pin holding part 33 formed on one side of the first base bracket 30 and fitting the second end 63b of the first hinge pin 63 therein, and a first friction spring 65

interposed between the first pin accommodating part 52 and the first end 63a of the first hinge pin 63 to resist a rotation of the first hinge pin 63. Further, in the one side of the first base bracket 30 is formed a spring supporting part 32, and a torsion spring 67 is inserted around the spring supporting part 32 and elastically acting in an opposite direction to a downward rotation of the lower link member 50 relative to the base member 20.

The first end 63a of the first hinge pin 63 is inserted in the first friction spring 65, so that friction is produced when the first hinge pin 63 is rotated, wherein the friction is preferably stronger than a torque due to a weight of the monitor main body 10 rotating about an axis of the first hinge pin 63. Further, the first friction spring 65 is matched to the first pin accommodating part 52 and does not rotate coincidentally with the first hinge pin 63.

The second end 63b of the first hinge pin 63 is fitted in the first pin holding part 33 formed on an end of the spring supporting part 32 of the first base bracket 30, so that the first hinge pin 63 does not rotate relative to the first base bracket 30.

The torsion spring 67 is inserted around the spring supporting part 32 of the first base bracket 30 and has one end coupled to the lower parts 50a of the lower link member 50 and

the other end coupled to the first base bracket 30. Here, the torsion spring 67 provides elasticity acting in an opposite direction to a downward rotation of the lower link member 50 relative to the base member 20. Further, the elasticity of the torsion spring 67 is approximately equal to the torque due to the weight of the monitor main body 10 rotating about an axis of the first hinge pin 63. Here, the weight of the monitor main body 10 is offset against the elasticity of the torsion spring 67, so that a user can easily rotate the lower link member 50 relative to the base member 20. Further, a user can easily rotate the lower link member 50 relative to the base member 20 with a force enough to overcome the friction between the first friction spring 65 and the first hinge pin 63.

The second base hinge part 71 includes a second hinge pin 73 formed with a first end having a circular cross section and a second end having a noncircular cross section, a second pin accommodating part 53 formed on the other lower part 50a of the lower link member 50 and accommodating the first end 73a of the second hinge pin 73 therein so as to be rotatably combined with the second hinge pin 73, a second pin holding part 43 formed on one side of the second base bracket 40 and fitting the second end 73b of the second hinge pin 73 therein, and a rotation restricting part 75 restricting a rotation of the lower link member 50 relative to the base member 20 within a predetermined

angle range.

The second hinge pin 73 has the same shape as the first hinge pin 63, and the first end 73a of the second hinge pin 73 is rotatably inserted in the second pin accommodating part 53 formed on the other lower part 50a of the lower link member 50. Further, the second end 73b of the second hinge pin 73 is fitted in the second pin holding part 43 formed on the second base bracket 40, so that the second hinge pin 73 does not rotate relative to the second base bracket 40.

The rotation restricting part 75 includes a pair of first stoppers 76 and a pair of first projections 77. Here, the first stoppers 76 are formed by cutting a fan shaped groove from the lower part 50a of the lower link member 50 around the second pin accommodating part 53 to face each other. The first projections 77 are provided around the second pin holding part 43 formed on one side of the second base bracket 40 and are selectively stopped by one of the first stoppers 76 according to a rotating direction of the lower link member 50.

Here, the lower link member 50 is rotatably combined to the second base bracket 40, which is fastened onto the base member 20, at its rotatable angle relative to the base member 20 to be restricted within a predetermined range. For instance, the rotatable angle of the lower link member 50 ranges from 0° to 90°. Here, the rotatable angle is determined according to a design of

the first stoppers 76 and the first projections 77, so that the rotatable angle can be changed by modifying the first stoppers 76 and the first projections 77 (refer to FIGS. 10 and 11).

With this configuration, an operation of the lower link member 50 hinging on the base hinge 60 is as follows. First, when the lower link member 50 in a state shown in FIG. 2 is pulled down toward the base member 20 with a predetermined force, the lower link member 50 is downwardly rotated about the axes of the first and second hinge pins 63 and 73 until the first stopper 76 incorporated with the lower link member 50 is stopped by one side of the first projection 77 formed on the second base bracket 40 (refer to FIG. 10). At this time, the lower link member 50 is generally designed to be folded onto the base member 20. To the contrary, when the lower link member 50 in another state shown in FIG. 10 is pulled upward from the base member 20 with the predetermined force, the lower link member 50 is upwardly rotated about the axes of the first and second hinge pins 63 and 73 until the first stopper 76 incorporated with the lower link member 50 is stopped by the other side of the first projection 77 formed on the second base bracket 40 (refer to FIG. 11). At this time, the user can easily rotate the lower link member 50 relative to the base member 20 with the force enough to overcome the friction between the first friction spring 65 and the first hinge pin 63 because the weight of the monitor main body 10 is offset against

the elasticity of the torsion spring 67.

Thus, the user can easily rotate the lower link member 50 relative to the base member 20 with the same force regardless of the upward or downward rotating direction.

The link hinge 110 includes the first and second link hinge parts 111 and 121 to rotatably connect the upper opposite parts 50b of the lower link member 50 with lower opposite parts 100a of the upper link member 100.

The upper link member 100 is rectangular and includes the lower opposite parts 100a to be rotatably connected by the first and second link hinge parts 111 and 121 to the upper opposite sides 50b of the lower link member 50, and upper opposite parts 100b to be rotatably connected by first and second monitor hinge parts 131 and 141 (to be described later) of the monitor hinge 130 to the third and fourth monitor brackets 80 and 90 fastened to the monitor main body 10.

The first link hinge part 111 includes a first hinge axle 113 combined to one lower part 100a of the upper link member 100 and one upper part 50b of the lower link member 50 so as to rotatably connect the one lower part 100a of the upper link member 100 with the one upper part 50b of the lower link member 50, a first axle accommodating part 55 protruding from the one upper part 50b of the lower link member 50 and passing the first hinge axle 113 to be rotatable therethrough, and a first axle

holding part 102 formed on the one lower part 100a of the upper link member 100 and combined with a first end of the first hinge axle 113 by first screws 104 so as to rotate coincidentally with the upper link member 100.

The first hinge axle 113 includes the first end combined to the first axle holding part 102 formed on the one lower part 100a of the upper link member 100 by the first screws 104 and rotating coincidentally with the upper link member 100, and a second end formed with an first auxiliary link combination part 115 accommodating a pair of first auxiliary link members 160. The first hinge axle 113 is rotatably inserted in the first axle accommodating part 55 formed on the one upper part 50b of the lower link member 50. Hence, the one lower part 100a of the upper link member 100 is rotated relative to the lower link member 50 about an axis of the first hinge axle 113.

The second link hinge part 121 includes a second hinge axle 123 combined to the other lower part 100a of the upper link member 100 and the other upper part 50b of the lower link member 50 so as to rotatably connect the other lower part 100b of the upper link member 100 with the other upper part 50b of the lower link member 50, a second axle accommodating part 56 protruding from the other upper part 50b of the lower link member 50 and passing the second hinge axle 123 to be rotatable therethrough, and a second axle combining part 103 formed on the other lower

part 100a of the upper link member 100 and passing the second hinge axle 123 to be rotatable therethrough.

The second hinge axle 123 includes a first end formed with a second auxiliary link combination part 125 accommodating a pair of second auxiliary link members 170 (to be described later), and a second end combined with a third auxiliary link combination part 127 accommodating a pair of third auxiliary link members 175 (to be described later). The second hinge axle 123 is rotatably combined to the second hinge axle holding part 103 formed on the other lower part 100a of the upper link member 100 by passing through a second hinge axle accommodating part 56 formed on the other upper part 50b of the lower link member 50.

Thus, the upper link member 100 is rotatable relative to the lower link member 50 about the axis of the first and second hinge axles 113 and 123.

The monitor hinge 130 includes the first and second monitor hinge parts 131 and 141 rotatably connecting the upper opposite parts 100b of the upper link member 100 to the third and fourth monitor brackets 80 and 90.

The first monitor hinge part 131 includes a third hinge pin 133 formed with a first end 133a having a circular cross section and a second end 133b having a noncircular cross section, a third pin accommodating part 83 formed on one side of the third monitor bracket 80 and inserting the first end 133a of the third hinge

pin 133 to be rotatable therein, and a third pin holding part 105 protruding from one upper part 100b of the upper link member 100 and fitting the second end 133b of the third hinge pin 133 therein.

The third hinge pin 133 has the same shape as the first and second hinge pins 63 and 73, and the first end 133a of the third hinge pin 133 is rotatably inserted in the third pin accommodating part 83 formed on the one side of the third monitor bracket 80. Further, the second end 133b of the third hinge pin 133 is fitted in the third pin holding part 105 formed on the one upper part 100b of the upper link member 100, so that the second end 133b of the third hinge pin 133 does not rotate relative to the monitor main body 10. Here, the third monitor bracket 80 fastened to the monitor main body 10 is rotated relative to the upper link member 100 about an axis of the third hinge pin 133.

The second monitor hinge part 141 includes a fourth hinge pin 143 formed with a first end 143a having a circular cross section and a second end 143b having a noncircular cross section, a fourth pin accommodating part 93 formed on one side of the fourth monitor bracket 90 and inserting the first end 143a of the fourth hinge pin 143 to be rotatable therein, a third hinge axle 145 fitting the second end 143b of the fourth hinge pin 143 therein and rotating coincidentally with the fourth hinge pin 143, a third hinge axle accommodating part 106 protruding from the

other upper part 100b of the upper link member 100 and passing the third hinge axle 145 to be rotatable therethrough, a second friction spring 144 interposed between the fourth pin accommodating part 93 and the first end 143a of the fourth hinge pin 143 and resisting a rotation of the fourth hinge pin 143, and a tilt restricting part 151 restricting a tilt of the monitor main body 10 relative to the upper link member 100 within a predetermined angle range.

The first end 143a of the fourth hinge pin 143 is inserted in the second friction spring 144, so that the friction is produced when the fourth hinge pin 143 is rotated relative to the second friction spring 144, wherein the friction is preferably stronger than a torque due to the weight of the monitor main body 10 rotating about an axis of the fourth hinge pin 143. Further, the second friction spring 144 is matched to the fourth pin accommodating part 93 and rotates coincidentally with the fourth pin accommodating part 93.

The second end 143b of the fourth hinge pin 143 is fitted in a fourth pin holding part 146 formed on a first end of the third hinge axle 145, so that the fourth hinge pin 143 rotates coincidentally with the third hinge axle 145.

The first end of the third hinge axle 145 is formed with the fourth pin holding part 146 holding the second end 143b of the fourth hinge pin 143 therein so as to rotate coincidentally with

the fourth hinge pin 143, and a second end of the third hinge axle 145 is formed with a third auxiliary link combination part 147 accommodating the pair of third auxiliary link members 175. Further, the third hinge axle 145 is rotatably combined to the third hinge axle accommodating part 106 provided in the other upper part 100b of the upper link member 100. Here, the fourth monitor bracket 90 fastened to the monitor main body 10 is rotatable relative to the other upper part 100b of the upper link member 100 about the axis of the fourth hinge pin 143. Here, the third hinge axle 145 rotating coincidentally with the fourth hinge pin 143 is rotatably combined to the third hinge axle accommodating part 106 provided in the other upper part 100b of the upper link member 100, with its rotation being interlocked with the third auxiliary link member 175 connected to the third hinge axle 145, and this will be described later in more detail.

Thus, the monitor main body 10 is rotatable relative to the upper link member 100 about the axes of the third and fourth hinge pins 133 and 143.

The tilt restricting part 151 includes a tilt restricting washer 152 irrotatably coupled to the fourth hinge pin 143, and a flat spring 155 combined to the fourth monitor bracket 90 by screws and rotating coincidentally with the monitor main body 10.

The tilt restricting washer 152 is formed with a matching hole 154 matching with the second end 143b of the fourth hinge

pin 143, and a pair of second stoppers 153 protruding from a circumference of the tilt restricting washer 152 at a predetermined distance from each other.

The flat spring 155 is formed with an elastic projection part 157 to be disposed between the second stoppers 153 of the tilt restricting washer 152 and allows the monitor main body 10 to be tilted relative to the upper link member 100 within a predetermined angle range. For instance, a tiltable angle of the monitor main body 10 ranges from -5° to 30°. Here, the tiltable angle is determined according to a design of the second stoppers 153, so that the tiltable angle can be changed by modifying the second stoppers 153 (refer to FIGS. 12 and 13). Furthermore, when the monitor main body 10 is tilted backwardly and folded to the upper link member 100, the elastic projection part 157 of the flat spring 155 is deformed enough to pass the backward second stopper 153 of the tilt restricting washer 152 (refer to FIGS. 9 and 14).

With this configuration, a tilting operation of the monitor main body 10 relative to the upper link member 100 is as follows. First, when the monitor main body 10 in the state of FIG. 2 is forwardly pulled with the predetermined force, the monitor main body 10 is tilted about the axes of the third and fourth hinge pins 133 and 143 until the elastic projection part 157 of the flat spring 155 rotating coincidentally with the monitor main

body 10 is stopped by the forward second stopper 153 formed in the tilt restricting washer 152 (refer to FIG. 12). To the contrary, when the monitor main body 10 in a state shown FIG. 12 is backwardly pulled with the predetermined force, the monitor main body 10 is tilted about the axes of the third and fourth hinge pins 133 and 143 until the elastic projection part 157 of the flat spring 155 rotating coincidentally with the monitor main body 10 is stopped by the backward second stopper 153 formed in the tilt restricting washer 152 (refer to FIG. 13). On the other hand, in order to fold the monitor main body 10 to the upper link member 100 completely, the monitor main body 10 in another state shown in FIG. 13 should be more backwardly tilted, with the elastic projection part 157 of the flat spring 155 being deformed and passing the backward second stopper 153 of the tilt restricting washer 152 (refer to FIGS. 9 and 14).

As shown in FIG. 9, according as the monitor main body 10 can be folded to the base member 20, a packing volume of the monitor can be decreased, thereby decreasing costs for keeping and carrying the monitor.

The first auxiliary link member 160 forms a pair which are respectively disposed at a position deviated from rotation axes of the first hinge axle 113 of the first link hinge part 111 and the first hinge pin 63 of the first base hinge part 61 to move parallel to the lower link member 50. Further, the first

auxiliary link member 160 connects the upper link member 100 and the base member 20 and transmits a rotary motion from the lower link member 50 relative to the base member 20 to the upper link member 100.

The first auxiliary link member 160 is shaped like a pair of bars having the same length. The first base bracket 30 is formed with a first auxiliary link supporting part 35 coupled with a lower part of the first auxiliary link member 160. The second end of the first hinge axle 113 of the first link hinge part 111 is formed with the first auxiliary link combination part 115 coupled with an upper part of the first auxiliary link member 160.

The first auxiliary link supporting part 35 and the first auxiliary link combination part 115 are formed with a pair of first pin holes 36 spaced from each other at a position deviated from the rotation axes, respectively. Opposite end parts of the first auxiliary link member 160 are formed with first pin through hole 161 to be aligned with the first pin holes 36. Further, there are provided first link pins 37 to be inserted in the first pin holes 36 through the first pin through holes 161, respectively.

Thus, the first pin through hole 161 formed in the lower part of the first auxiliary link member 160 is movably coupled by using the first link pin 37 to the first auxiliary link supporting part 35 of the first base bracket 30 fastened to the

base member 20. The first pin through hole 161 formed in the upper part of the first auxiliary link member 160 is movably coupled by using the first link pin 37 to the first auxiliary link combination part 115 formed in the second end of the first hinge axle 113 rotating coincidentally with the upper link member 100. Therefore, the first auxiliary link member 160 operates parallel with the lower link member 50 according to the rotation of the lower link member 50 relative to the base member 20.

As shown in FIG. 5, when the lower link member 50 is rotated downwardly to the base member 20, the first auxiliary link combination part 115 coupled to the upper part of the first auxiliary link member 160 is rotated clockwise relative to the lower link member 50, thereby rotating the upper link member 100 downward to the lower link member 50. To the contrary, as shown in FIG. 6, when the lower link member 50 is rotated upward from the base member 20, the first auxiliary link combination part 115 coupled to the upper part of the first auxiliary link member 160 is rotated counterclockwise relative to the lower link member 50, thereby rotating the upper link member 100 upward from the lower link member 50. That is, the upper link member 100 is interlocked with the lower link member 50 by the first auxiliary link member 160.

On the other hand, the first pin through hole 161 of the lower part of the first auxiliary link member 160 is coupled to

the first auxiliary link supporting part 35 at the position deviated from the rotation axis of the first hinge pin 63. The first pin through hole 161 of the upper part of the first auxiliary link member 160 is coupled to the first auxiliary link combination part 115 at the position deviated from the rotation axis of the first hinge axle 113. Here, a rotation ratio of the upper link member 100 to the lower link member 50 can be adjusted according to different deviations of the lower and upper parts of the first auxiliary link member 160 from the first hinge pin 63 and the first hinge axle 113, respectively. In this embodiment, a deviation degree of the lower part of the first auxiliary link member 160 about the first hinge pin 63 is larger than that of the upper part of the first auxiliary link member 160 about the first hinge axle 113, so that the upper link member 100 is rotated greater in proportion to the rotation of the lower link member 50. For instance, when the lower link member 50 is rotated at an angle of 90°, the upper link member 100 is rotated at an angle of 145°.

With this configuration, a height of the monitor main body 10 can be adjusted as follows. As shown in FIGS. 5 and 6, when the lower link member 50 is rotated relative to the base member 10, the upper link member 100 rotates greater than the lower link member 50, with being interlocked by the first auxiliary link member 160. Thus, the height of the monitor main body 10 can be

easily and widely adjusted because both the lower link member 50 and the upper link member 100 are rotated. Further, because it is possible to adjust the rotation ratio of the upper link member 100 to the lower link member 50, the height of the monitor main body 10 is adjusted while a distance between a user and the monitor main body 10 is maintained constant.

The second auxiliary link member 170 forms a pair which are respectively disposed at a position deviated from rotation axes of the second hinge axle 123 of the second link hinge part 121 and the second hinge pin 73 of the second base hinge part 71 to move parallel with the lower link member 50. Further, the second auxiliary link member 170 connects the second link hinge part 121 with the base member 20, and transmits the rotary motion from the lower link member 50 relative to the base member 20 to the third auxiliary link member 175.

The second auxiliary link member 170 is shaped like a pair of bars having the same length. The second base bracket 40 is formed with a second auxiliary link supporting part 45 coupled with a lower part of the second auxiliary link member 170. The first end of the second hinge axle 123 of the second link hinge part 121 is formed with the second auxiliary link combination part 125 coupled with an upper part of the second auxiliary link member 170.

The second auxiliary link supporting part 45 and the second

auxiliary link combination part 125 are formed with a pair of second pin holes 46 spaced from each other at a position deviated from the rotation axes, respectively. Opposite end parts of the second auxiliary link member 170 are formed with second pin through holes 171, respectively, to be aligned with the second pin holes 46. Further, second link pins 47 are inserted in the second pin holes 46 through the second pin through holes 171, respectively.

Thus, the second pin through hole 171 formed in the lower part of the second auxiliary link member 170 is movably coupled by using the second link pin 47 to the second auxiliary link supporting part 45 of the second base bracket 40 fastened to the base member 20. The second pin through hole 171 formed in the upper part of the second auxiliary link member 170 is movably coupled by using the second link pin 47 to a lower part of the second auxiliary link combination part 147 formed in the first end of the second hinge axle 123 movably coupled with a lower part of the third auxiliary link member 175. Therefore, the second auxiliary link member 170 operates parallel with the lower link member 50 according to the rotation of the lower link member 50 relative to the base member 20.

As shown in FIG. 7, when the lower link member 50 is rotated downwardly to the base member 20, the second auxiliary link combination part 125 coupled to the upper part of the second

auxiliary link member 170 is rotated counterclockwise relative to the lower link member 50, thereby rotating the second hinge axle 123 counterclockwise relative to the lower link member 50. At this time, although the lower link member 50 is rotated downwardly to the base member 20, an angle between the second hinge axle 123 and the base member 20 is kept constant because not only the second auxiliary link member 170 includes a pair of bars having the same length but also the lower and upper parts of the second auxiliary link member 170 connected to the second auxiliary link supporting part 45 and the second auxiliary link combination part 125 are equally deviated from the rotation axes of the second hinge pin 73 and the second hinge axle 123, respectively.

To the contrary, as shown in FIG. 8, when the lower link member 50 is rotated upward from the base member 20, the second auxiliary link combination part 125 coupled to the upper part of the second auxiliary link member 170 is rotated clockwise relative to the lower link member 50, thereby rotating the second hinge axle 123 clockwise relative to the lower link member 50. At this time, although the lower link member 50 is rotated upwardly from the base member 20, the angle between the second hinge axle 123 and the base member 20 is kept constant. That is, the second hinge axle 123 is interlocked with the second auxiliary link member 170.

The third auxiliary link member 175 forms a pair which are respectively disposed at a position deviated from rotation axes of the second hinge axle 123 of the second link hinge part 121 and the fourth hinge pin 143 of the second monitor hinge part 141, to move parallel with the upper link member 100. Further, the third auxiliary link member 175 connects the second link hinge part 121 with the second monitor hinge part 141 and transmits the rotary motion from the upper link member 100 relative to the lower link member 50 to the monitor main body 10.

The third auxiliary link member 175 is shaped like a pair of bars having the same length, and disposed between the first and second link hinge parts 111 and 121 of the upper link member 100 and between the first and second monitor hinge parts 131 and 141 of the upper link member 100. The second end of the second hinge axle 123 is formed with a third auxiliary link supporting part 127 coupled with a lower part of the third auxiliary link member 175. The second end of the third hinge axle 145 is formed with the third auxiliary link combination part 147 coupled with an upper part of the third auxiliary link member 175.

The third auxiliary link supporting part 127 and the third auxiliary link combination part 147 are formed with a pair of third pin holes 128 spaced from each other at a position deviated from the rotation axes, respectively. Opposite end parts of the third auxiliary link member 175 are formed with third pin through

holes 176 to be aligned with the third pin holes 128. Further, third link pins 129 are inserted in the third pin holes 128 through the third pin through holes 176, respectively.

Thus, the third pin through hole 176 formed in the lower part of the third auxiliary link member 175 is movably coupled by using the third link pin 129 to the third auxiliary link supporting part 127 of the second end of the second hinge axle 123. The third pin through hole 176 formed in the upper part of the third auxiliary link member 175 is movably coupled by using the third link pin 129 to the third auxiliary link combination part 147 of the third hinge axle 123. Therefore, the third auxiliary link member 175 operates parallel with the upper link member 100 according to a rotation of the upper link member 100 relative to the lower link member 50.

As shown in FIG. 7, when the lower link member 50 is rotated downwardly to the base member 20, the upper link member 100 rotates downwardly to the lower link member 50 by the first auxiliary link member 160, so that the third auxiliary link combination part 147 coupled to the upper part of the third auxiliary link member 175 is rotated clockwise relative to the lower link member 50, thereby rotating the third hinge axle 145 clockwise relative to the third hinge axle accommodating part 106 of the upper link member 100. Then, a rotary motion of the third hinge axle 145 is transmitted to the fourth monitor bracket 90

through the fourth hinge pin 143 combined in the fourth monitor bracket 90 with a friction due to the second friction spring 144, thereby rotating the monitor main body 10 clockwise.

To the contrary, as shown in FIG. 8, when the lower link member 50 is rotated upwardly from the base member 20, the upper link member 100 rotates upwardly from the lower link member 50 by the first auxiliary link member 160, so that the third auxiliary link combination part 147 coupled to the upper part of the third auxiliary link member 175 is rotated counterclockwise relative to the lower link member 50, thereby rotating the third hinge axle 145 counterclockwise relative to the third hinge axle accommodating part 106 of the upper link member 100. Then, the rotary motion of the third hinge axle 145 is transmitted to the fourth monitor bracket 90 through the fourth hinge pin 143, thereby rotating the monitor main body 10 counterclockwise. That is, the third hinge axle 145 is interlocked with the third auxiliary link member 175.

With this configuration, the monitor main body 10 of the monitor according to the present invention can be rotated as follows. The monitor main body 10 is rotated by the rotation of the lower link member 50, wherein the second auxiliary link member 170 rotates parallel with the lower link member 50, and the third auxiliary link member 175 having the lower part interlocked with the second auxiliary link member 170 and the

upper part coupled to the third hinge axle 145 rotates parallel with the upper link member 100. Further, when the upper link member 100 is rotated downwardly to the lower link member 50, the monitor main body 10 rotates backward. When the upper link member 100 is rotated upwardly from the lower link member 50, the monitor main body 10 rotates forward. Here, when the height of the monitor main body 10 is adjusted, a tilting angle of the monitor main body 10 is not changed.

As shown in FIG. 15, the monitor according to the present invention includes a base bracket 180 having a first side combined to a rear side of the base member 20 and a second side combined to the inclined plane such as the wall, etc.

The base bracket 180 includes a plurality of hooks 182 to be latched to a plurality of hook holes 22 formed on the base member 20, a plurality of first combining holes 183 allowing the base bracket 180 to be installed to the inclined plane, and a plurality of second combining holes 185 to combine the base member 20 with the base bracket 180. Further, the base member 20 is formed with a plurality of third combining holes 25 corresponding to the second combining holes 25, and is combined with the base bracket 180 by second screws 186.

Here, the second combining holes 185 of the base bracket 180 and the third combining holes 25 of the base member 20 are formed in consideration of a VESA regulation, so that the monitor can be

installed to an arm stand 190 (see FIG. 16) according to the VESA regulation. Thus, the monitor can be easily installed to the inclined plane such as the wall.

FIG. 16 is a side view of the monitor according to the present invention, which illustrates the monitor being mounted onto the arm stand. As shown in FIG. 16, the arm stand 190 includes a monitor supporting part 191 provided in an upper part thereof, and the monitor supporting part 191 is formed with a plurality of fourth combining holes 193 according to the VESA regulation. Hence, the third combining holes 25 of the base member 20 are aligned with the fourth combining holes 193 of the monitor supporting part 191, and then third screws 195 are combined to the third combining holes 25 of the base member 20 via the fourth combining hole 193 of the monitor supporting part 191. Thus, the monitor can be easily installed onto various arm stands according to the VESA regulation.

In the foregoing embodiment, the torsion spring is provided in the first base hinge part. However, another torsion spring may be provided in at least one of the first and second monitor hinge parts and the second base hinge part.

In the foregoing embodiment, the rotation restricting part is provided in the second base hinge part. However, another rotation restricting part may be provided in the first base hinge part.

In the foregoing embodiment, the tilt restricting part is provided in the second base hinge part. However, another tilt restricting part may be provided in the first base hinge part.

In the foregoing embodiment, the first and second friction springs are provided in the first second base hinge part and the second monitor hinge part, respectively. However, other friction springs may be provided in the second base hinge part and the first monitor hinge part.

As described above, the present invention provides a monitor in which an allowable height adjustment of a monitor main body is relatively large, and costs for keeping and carrying the monitor can be decreased by decreasing a packing volume of the monitor.

Further, the present invention provides a monitor, in which a height of a monitor main body can be adjusted without changing a tilting angle of the monitor main body, and the tilting angle of the monitor main body with respect to a base member can be properly adjusted.

Further, the present invention provides a monitor, in which a base member is detachably combined with a base bracket and can be installed onto an inclined plane such as a wall, an arm stand, etc., and particularly, easily installed onto various arm stands according to the VESA regulation.

Although an embodiment of the present invention has been shown and described, it will be appreciated by those skilled in

the art that changes may be made in these embodiments without departing from the principles and spirit of the invention, the scope of which is defined in the appended claims and their equivalents.

What is claimed is:

1. A monitor comprising a monitor main body displaying a picture thereon, and a base member supporting the monitor main body, further comprising:

a lower link member rotatably combined to a base hinge provided in the base member;

an upper link member rotatably combined to a monitor hinge provided in the monitor main body;

a link hinge provided between the upper link member and the lower link member and allowing the upper link member to rotate relative to the lower link member; and

a first auxiliary link member disposed parallel with the lower link member at a position deviated from axes of the link hinge and the base hinge, connecting the lower link member with the upper link member, and transmitting a rotary motion from the lower link member relative to the base member to the upper link member.

2. The monitor according to claim 1, further comprising, in order to transmit rotary motion from the upper and lower link members relative to the base member to the monitor main body:

a second auxiliary link member disposed parallel with the lower link member at a position deviated from axes of the link hinge and the base hinge, connecting the link hinge with the base

member; and

a third auxiliary link member disposed parallel with the upper link member at a position deviated from axes of the monitor hinge and the link hinge, and connecting the monitor hinge with the link hinge.

3. The monitor according to claim 1 or 2, further comprising:

a base bracket combined to the base member so as to install the base member onto an inclined plane, wherein the base bracket comprises at least one hook to be latched to at least one hook hole formed on the base so as to be detachably combined to the base member.

4. The monitor according to claim 3, wherein the base bracket comprises at least one first combining hole so as to be installed to the inclined plane.

5. The monitor according to claim 4, wherein the base bracket comprises at least one second combining hole so as to be combined with the base member, and the base member comprises a third combining hole corresponding to the second combining hole.

6. The monitor according to claim 5, wherein the second

combining holes of the base bracket and the third combining holes of the base member are formed according to a VESA regulation.

7. The monitor according to claim 2, further comprising first and second base brackets spaced from each other and combined to the base member, and wherein the base bracket comprises first and second base hinge parts rotatably connecting lower opposite parts of the lower link member to the first and second base brackets, respectively.

8. The monitor according to claim 7, wherein the first base hinge part comprises:

a first hinge pin formed with a first end having a circular cross section and a second end having a noncircular cross section;

a first pin accommodating part formed on one lower part of the lower link member and accommodating the first end of the first hinge pin to be rotatable therein; and

a first pin holding part formed on one side of the first base bracket and fitting the second end of the first hinge pin therein.

9. The monitor according to claim 8, wherein between the first pin accommodating part and the first end of the first hinge

pin is interposed a first friction spring resisting the rotation of the first hinge pin.

10. The monitor according to claim 7, wherein the first base bracket is formed with a spring supporting part protruding from one side thereof, and a torsion spring is put on the spring supporting part and elastically acting in an opposite direction to a downward rotation of the lower link member relative to the base member.

11. The monitor according to claim 7, wherein the second base hinge part comprises a second hinge pin formed with a first end having a circular cross section and a second end having a noncircular cross section;

a second pin accommodating part formed on the other lower part of the lower link member and accommodating the first end of the second hinge pin to be rotatable therein; and

a second pin holding part formed on one side of the second base bracket and fitting the second end of the second hinge pin therein.

12. The monitor according to claim 11, wherein at least one of the first and second base hinge parts is provided with a rotation restricting part restricting the rotation of the lower

link member relative to the base member within a predetermined angle range.

13. The monitor according to claim 12, wherein the rotation restricting part comprises

a pair of first stoppers formed by cutting a fan shaped groove in the other lower part of the lower link member, around the second pin accommodating part, to face each other, and

a pair of first projections provided around the second pin holding part formed on one side of the second base bracket, and selectively stopped by one of the first stoppers according to the rotating direction of the lower link member.

14. The monitor according to claim 7, wherein the link hinge comprises first and second link hinge parts to rotatably connect upper opposite parts of the lower link member with lower opposite parts of the upper link member, respectively.

15. The monitor according to claim 14, wherein the first link hinge part comprises:

a first hinge axle combined to one lower part of the upper link member and one upper part of the lower link member so as to rotatably connect the one lower part of the upper link member with the one upper part of the lower link member;

a first axle accommodating part formed in the one upper part of the lower link member and passing the first hinge axle to be rotatable therethrough; and

a first axle holding part formed on the one lower part of the upper link member and combined with a first end of the first hinge axle so as to rotate coincidentally with the upper link member.

16. The monitor according to claim 15, wherein the second link hinge part comprises:

a second hinge axle combined to the other lower part of the upper link member and the other upper part of the lower link member so as to rotatably connect the other lower part of the upper link member with the other upper part of the lower link member;

a second axle accommodating part formed in the other upper part of the lower link member and passing the second hinge axle to be rotatable therethrough; and

a second axle combining part formed on the other lower part of the upper link member and passing the second hinge axle to be rotatable therethrough.

17. The monitor according to claim 16, further comprising:

third and fourth monitor brackets spaced from each other and

combined to the monitor main body, and wherein the monitor hinge comprises first and second monitor hinge parts rotatably connecting the upper opposite parts of the upper link member to the third and fourth monitor brackets, respectively.

18. The monitor according to claim 17, wherein the first monitor hinge part comprises:

a third hinge pin formed with a first end having a circular cross section and a second end having a noncircular cross section;

a third pin accommodating part formed on one side of the third monitor bracket and inserting the first end of the third hinge pin to be rotatable therein; and

a third pin holding part formed in one upper part of the upper link member and fitting the second end of the third hinge pin therein.

19. The monitor according to claim 17, wherein the second monitor hinge part comprises:

a fourth hinge pin formed with a first end having a circular cross section and a second end having a noncircular cross section;

a fourth pin accommodating part formed on one side of the fourth monitor bracket and inserting the first end of the fourth

hinge pin to be rotatable therein;

a third hinge axle fitting the second end of the fourth hinge pin therein and rotating coincidentally with the fourth hinge pin; and

a third hinge axle accommodating part formed in the other upper part of the upper link member and passing the third hinge axle to be rotatable therethrough.

20. The monitor according to claim 19, wherein between the fourth pin accommodating part and the first end of the fourth hinge pin is interposed a second friction spring resisting the rotation of the fourth hinge pin.

21. The monitor according to claim 19, wherein at least one of the first and second monitor hinge parts is provided with a tilt restricting part restricting the tilt of the monitor main body relative to the upper link member within a predetermined angle range.

22. The monitor according to claim 21, wherein the tilt restricting part comprises:

a tilt restricting washer formed with a matching hole matching with the second end of the fourth hinge pin, and a pair of second stoppers protruding from the circumference thereof at a

predetermined distance from each other; and

a flat spring combined to one side of the fourth monitor bracket, rotatable between the pair of second stoppers of the tilt restricting washer coincidentally with the monitor main body, and restricting the tilt of the monitor main body relative to the upper link member within a predetermined angle range.

23. The monitor according to claim 22, wherein the flat spring is formed with an elastic projection part to be disposed between the pair of second stoppers of the tilt restricting washer.

24. The monitor according to claim 23, wherein the elastic projection part of the flat spring is deformed enough to pass at least one of the second stoppers of the tilt restricting washer.

25. The monitor according to claim 16, wherein the first auxiliary link member forms a pair, and

the first base bracket is formed with a first auxiliary link supporting part coupled with a lower part of the first auxiliary link member, and the second end of the first hinge axle of the first link hinge part is formed with the first auxiliary link combination part coupled with an upper part of the first auxiliary link member.

26. The monitor according to claim 25, wherein the first auxiliary link supporting part and the first auxiliary link combination part are respectively formed with a pair of first pin holes spaced from each other at a predetermined distance, opposite end parts of the first auxiliary link member are formed with first pin through holes to be aligned with the first pin holes, and first link pins are inserted in the first pin holes through the first pin through holes.

27. The monitor according to claim 19, wherein the second auxiliary link member forms a pair, and

the second base bracket is formed with a second auxiliary link supporting part coupled with a lower part of the second auxiliary link member, and the first end of the second hinge axle is formed with the second auxiliary link combination part coupled with an upper part of the second auxiliary link member.

28. The monitor according to claim 27, wherein the second auxiliary link supporting part and the second auxiliary link combination part are respectively formed with a pair of second pin holes spaced from each other at a predetermined distance, opposite end parts of the second auxiliary link member are formed with second pin through holes to be aligned with the second pin

holes, and second link pins are inserted in the second pin holes through the second pin through holes.

29. The monitor according to claim 27, wherein the third auxiliary link member forms a pair, and the second end of the second hinge axle is formed with a third auxiliary link supporting part coupled with a lower part of the third auxiliary link member, and the second end of the third hinge axle is formed with the third auxiliary link combination part coupled with an upper part of the third auxiliary link member.

30. The monitor according to claim 28, wherein the third auxiliary link supporting part and the third auxiliary link combination part are respectively formed with a pair of third pin holes spaced from each other at a predetermined distance, opposite end parts of the third auxiliary link member are formed with third pin through holes to be aligned with the third pin holes, and third link pins are inserted in the third pin holes through the third pin through hole.

ABSTRACT OF DISCLOSURE

A monitor including a monitor main body displaying a picture thereon, and a base member supporting the monitor main body includes a lower link member rotatably combined to a base hinge provided in the base member; an upper link member rotatably combined to a monitor hinge provided in the monitor main body; a link hinge provided between the upper link member and the lower link member and allowing the upper link member to rotate relative to the lower link member; and a first auxiliary link member disposed parallel with the lower link member at a position deviated from axes of the link hinge and the base hinge, connecting the lower link member with the upper link member, and transmitting rotary motion from the lower link member relative to the base member to the upper link member.

FIG. 1

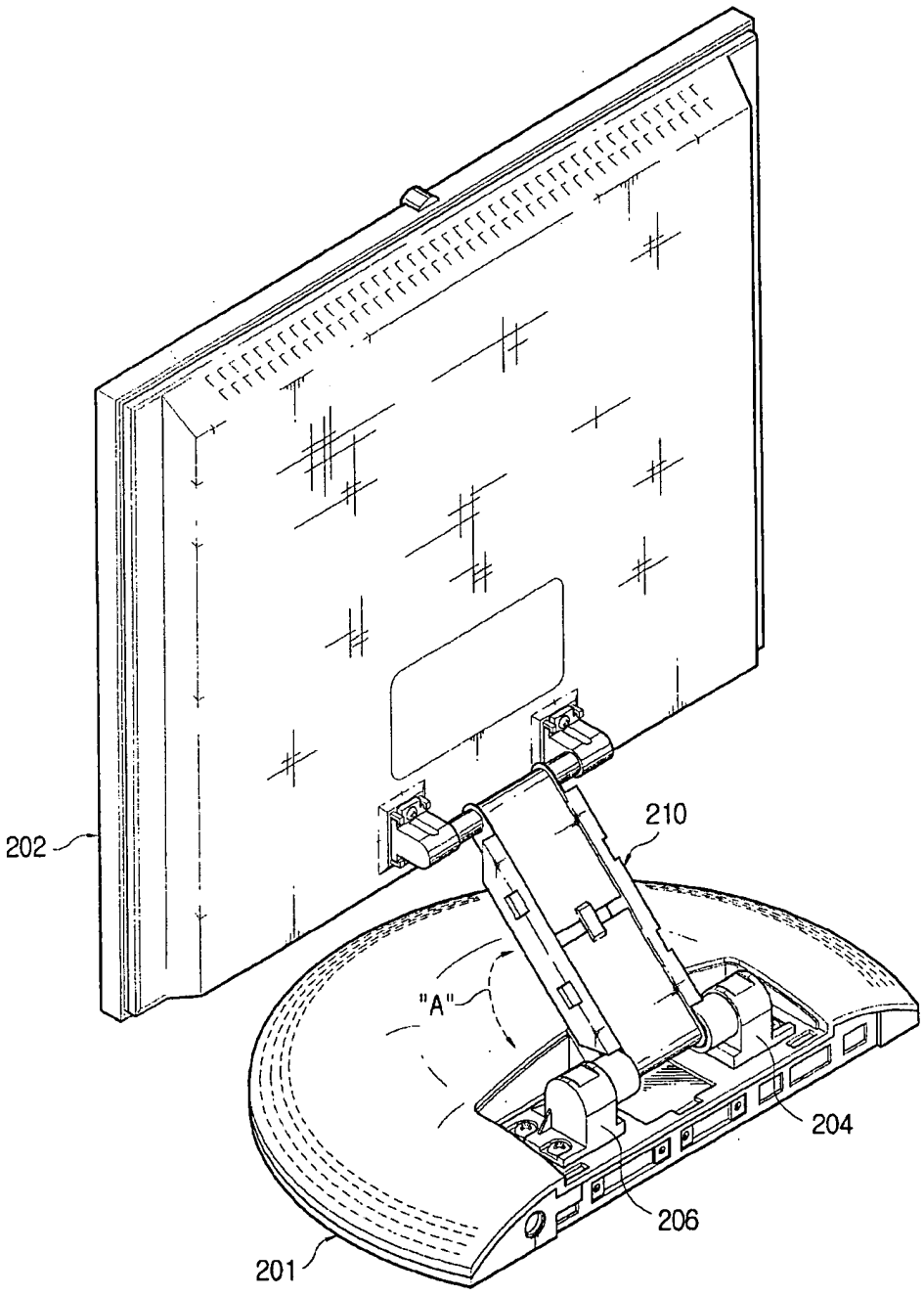


FIG. 2

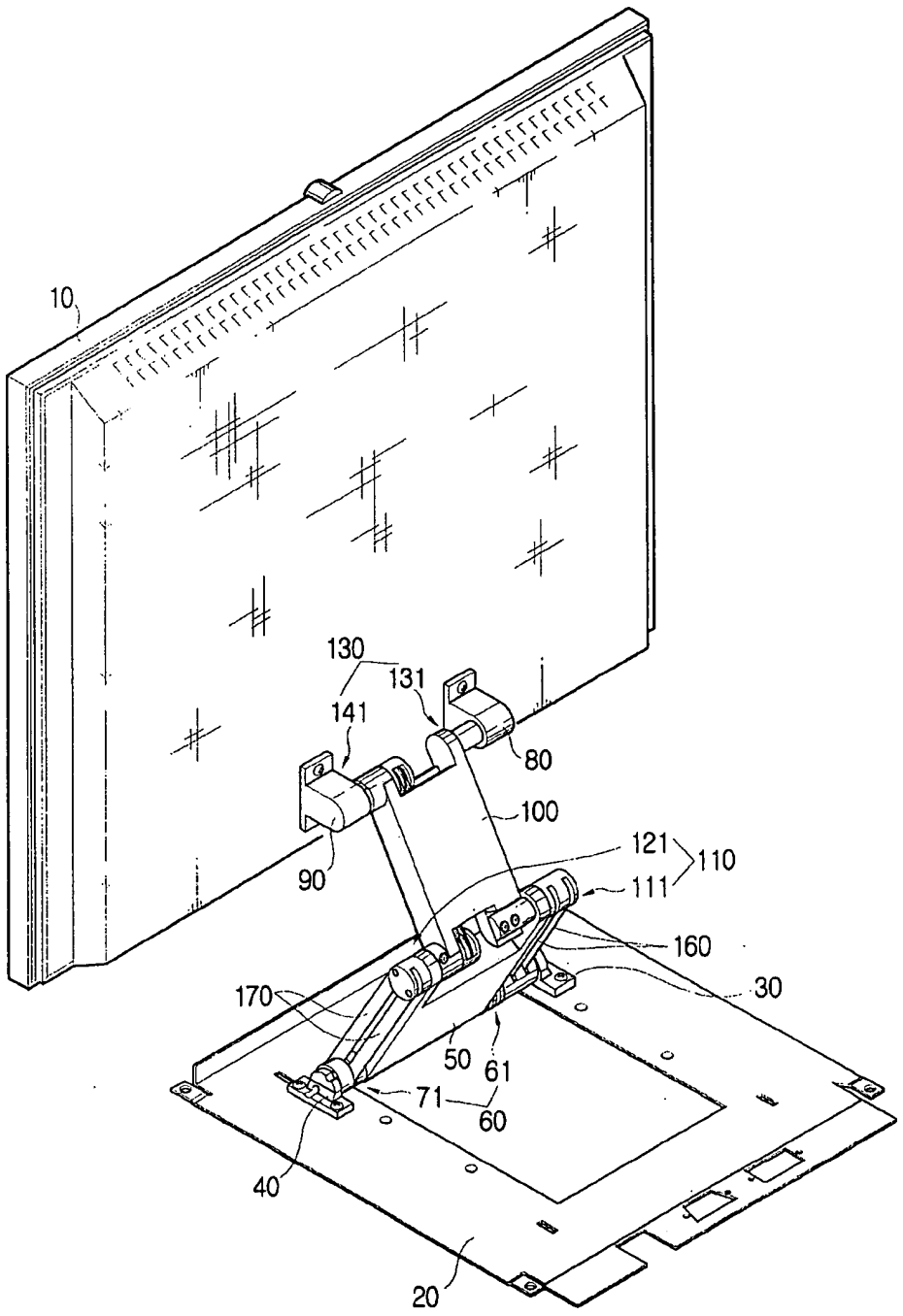


FIG. 3

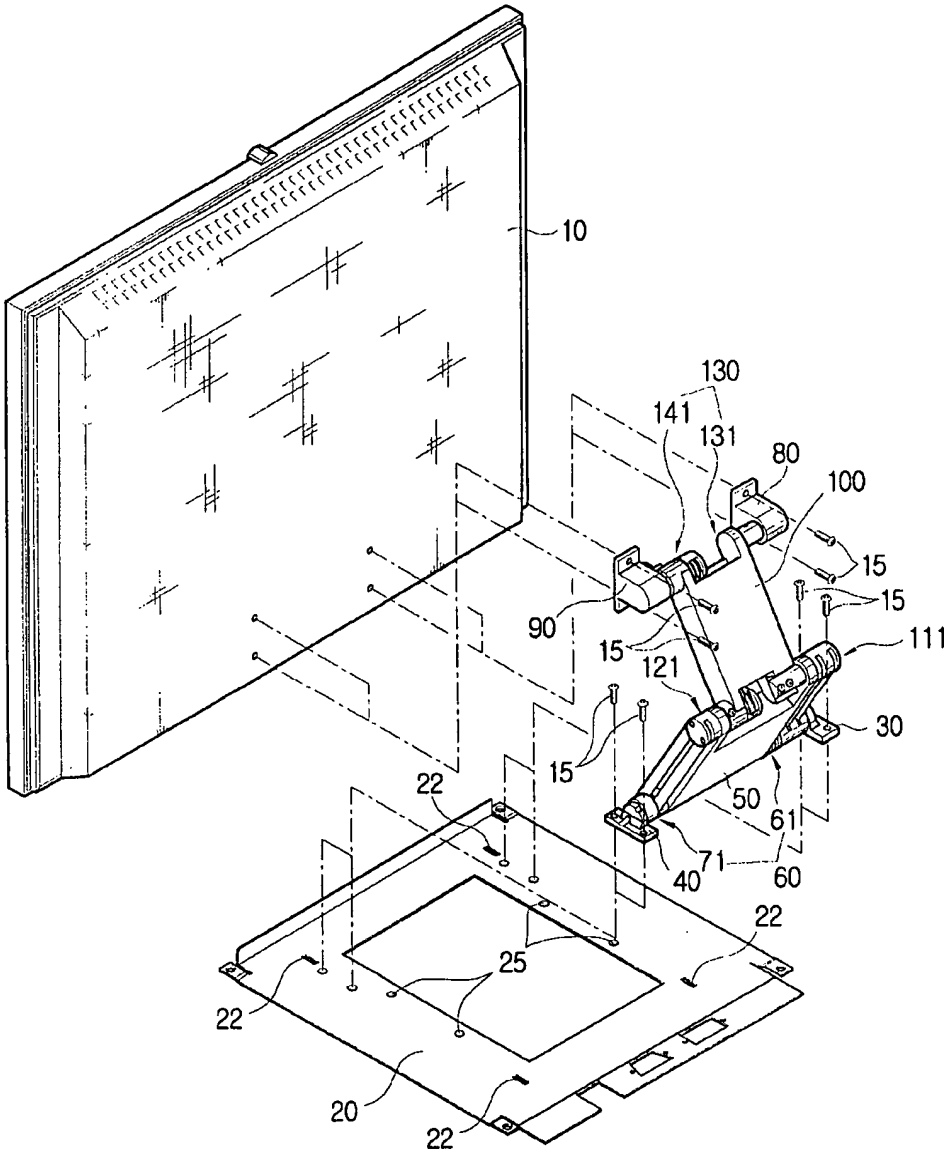

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FIG. 4

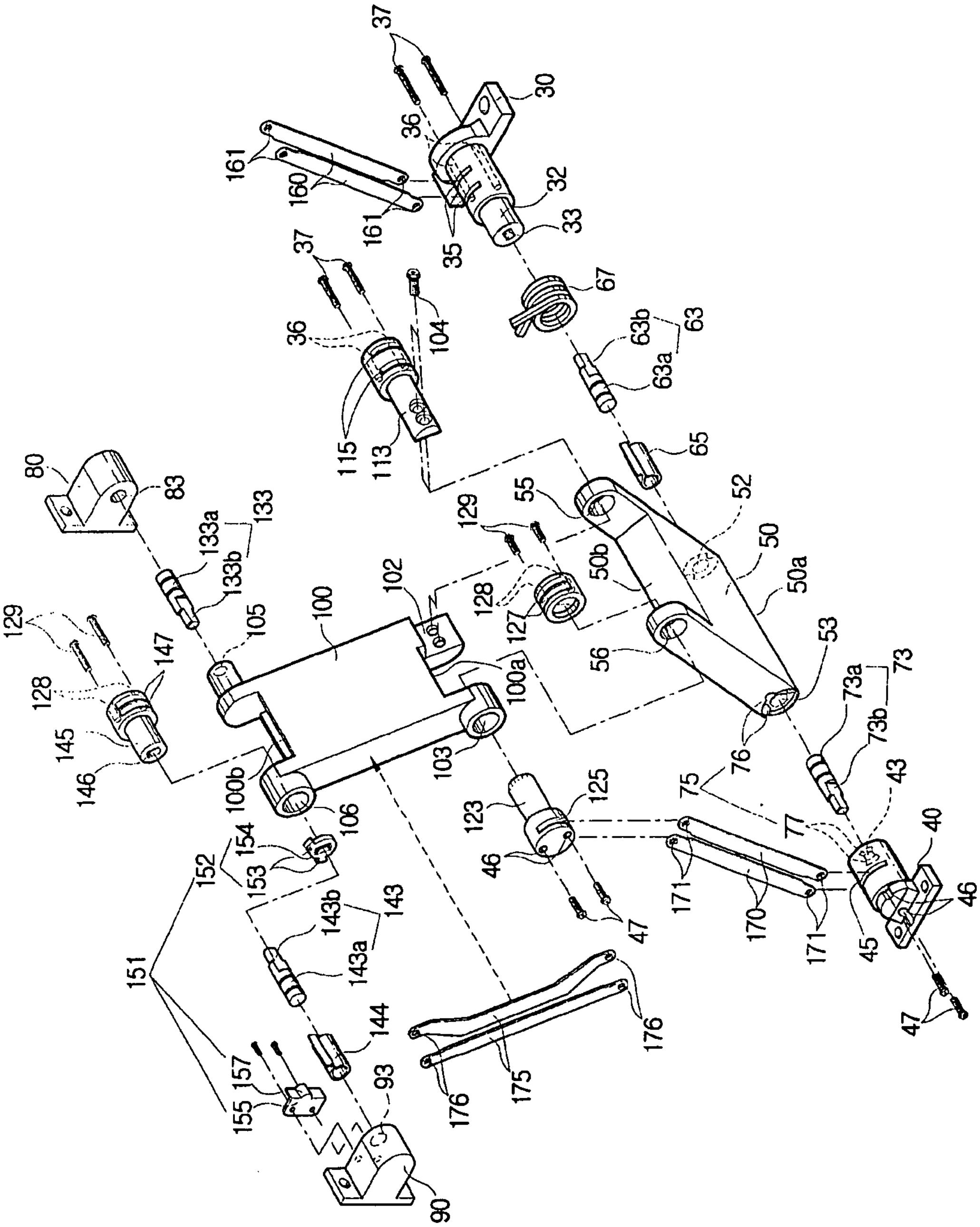
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FIG. 5

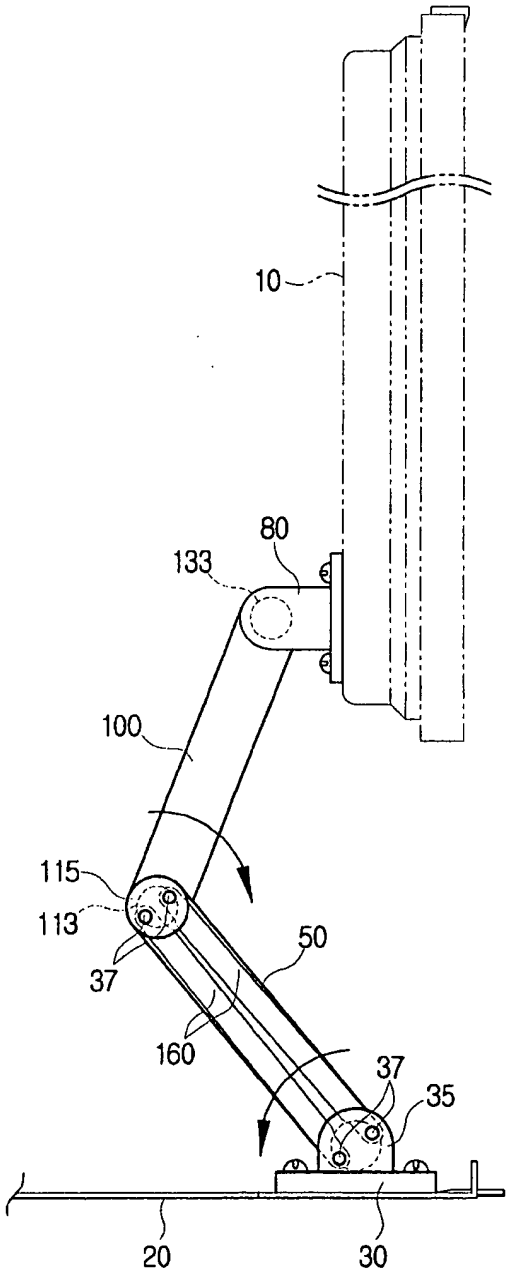

FIG. 6

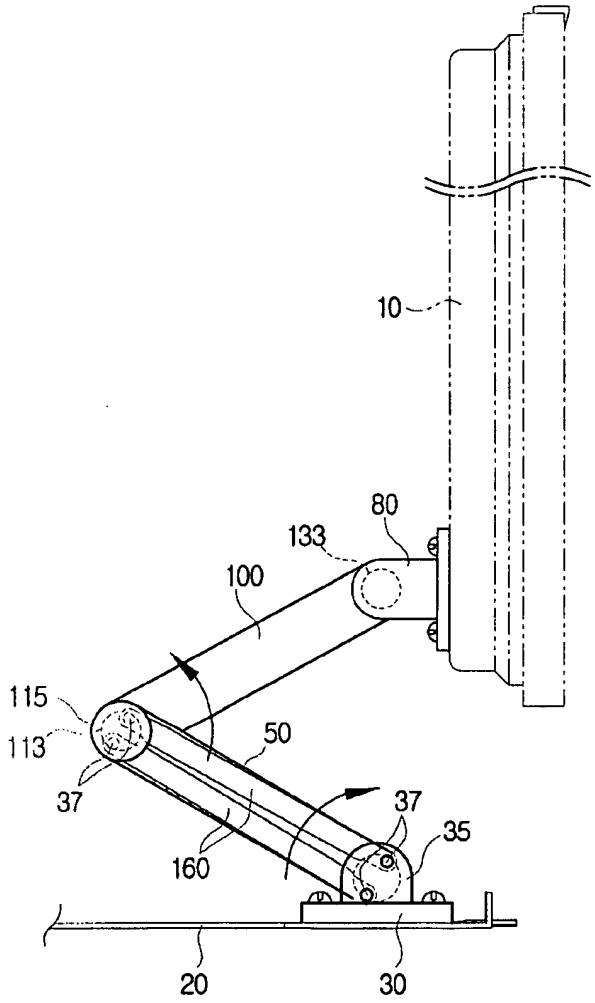

FIG. 7

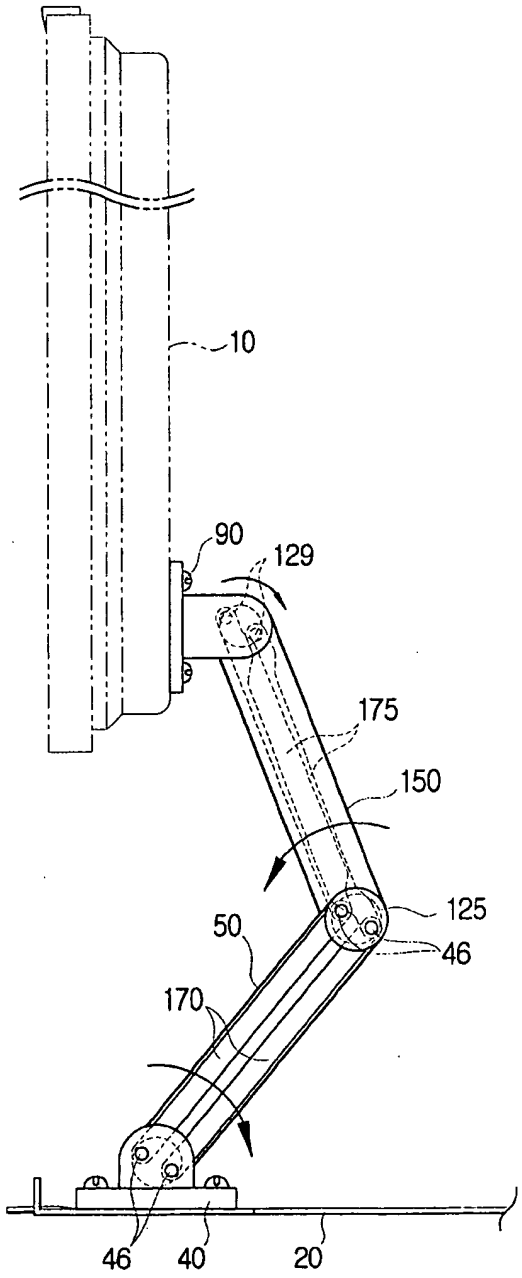

FIG. 8

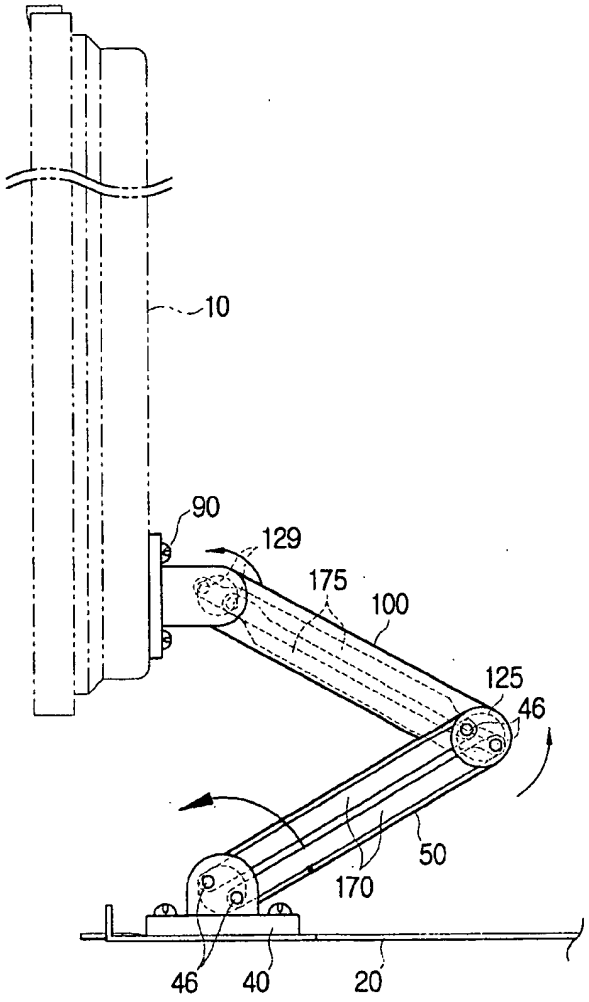

FIG. 9

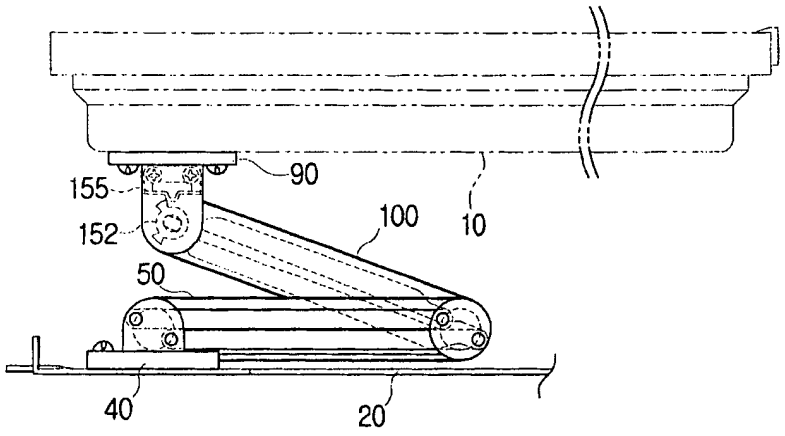

FIG. 10

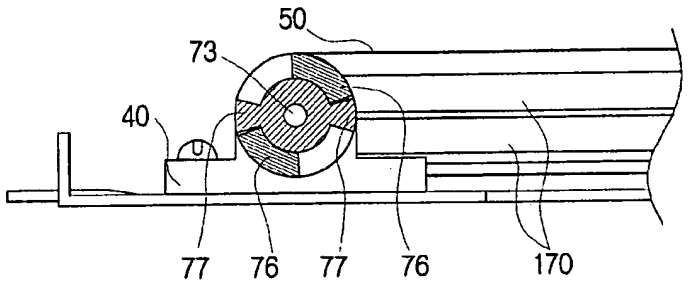

FIG. 11

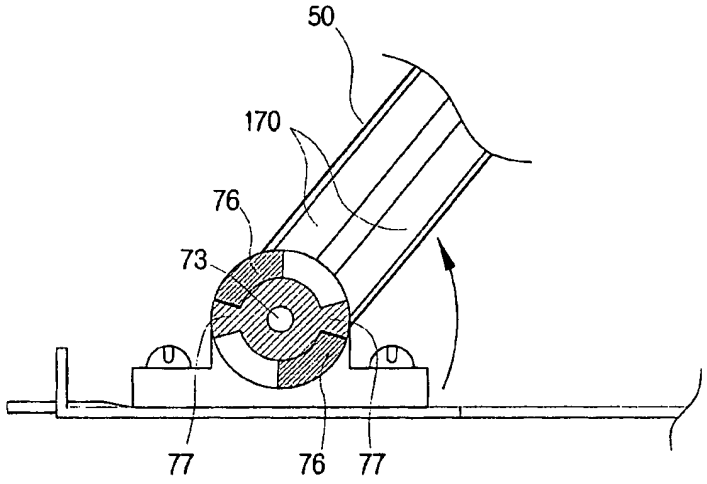

FIG. 12

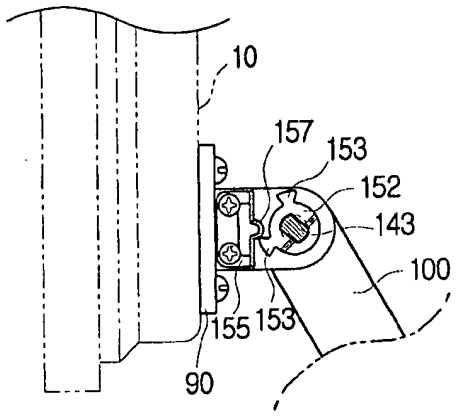

FIG. 13

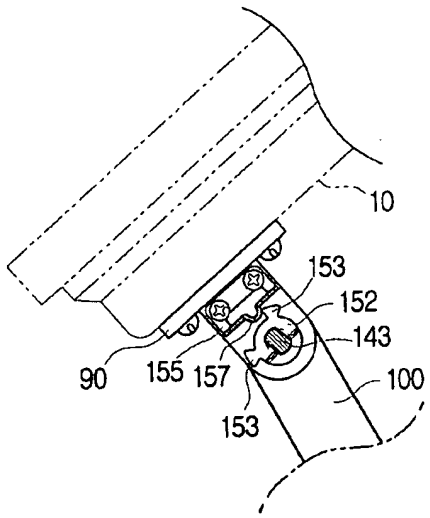

FIG. 14

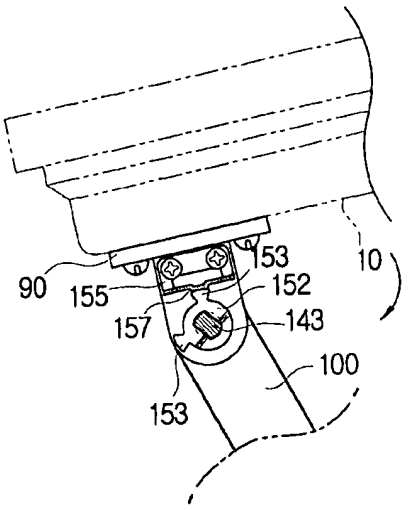

FIG. 15

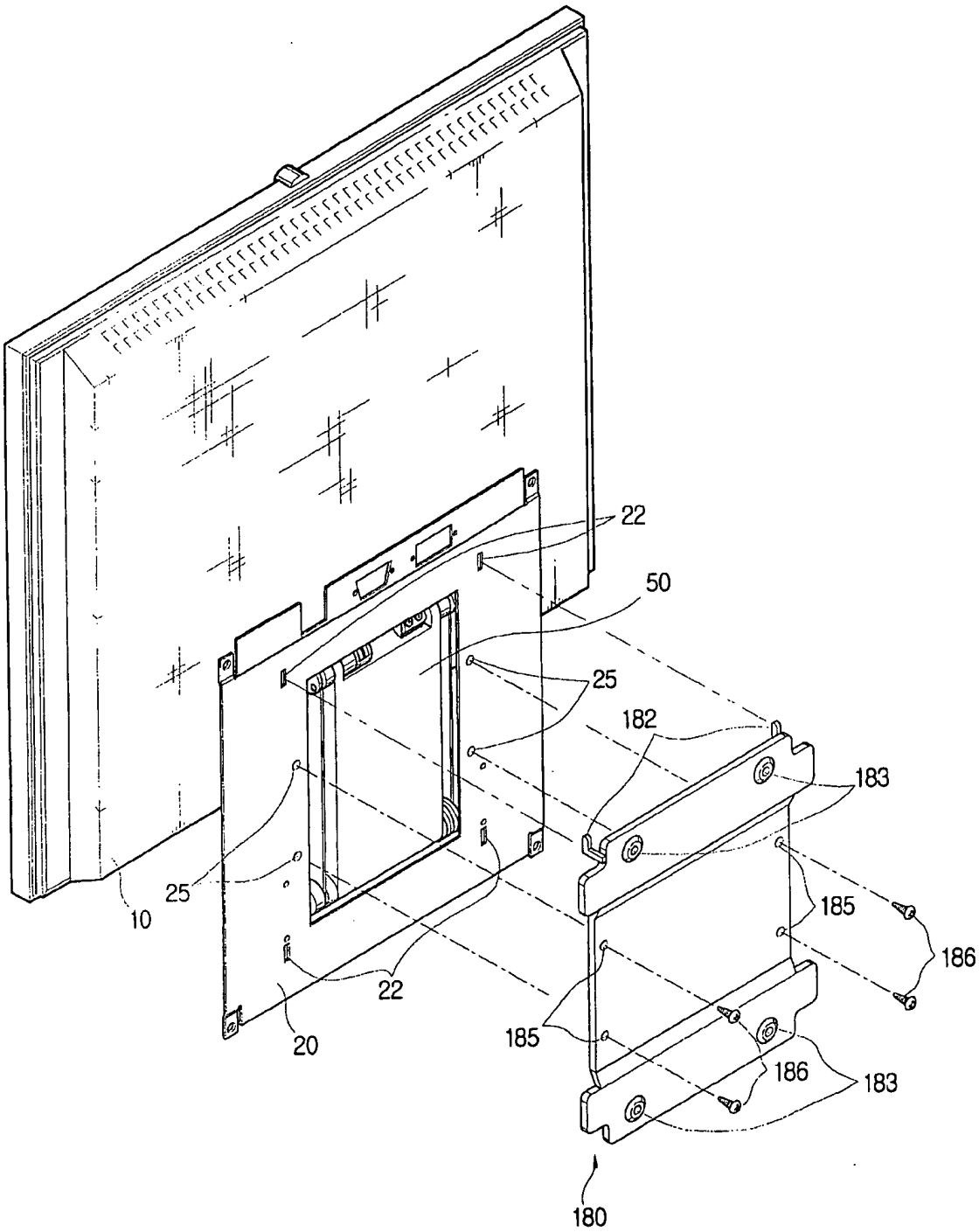

FIG. 16